



# VoIP 9-1-1 Solutions

**Stephen Meer, ENP**  
Intrado, Co-Founder and  
Chief Technology Officer



# About Intrado

---

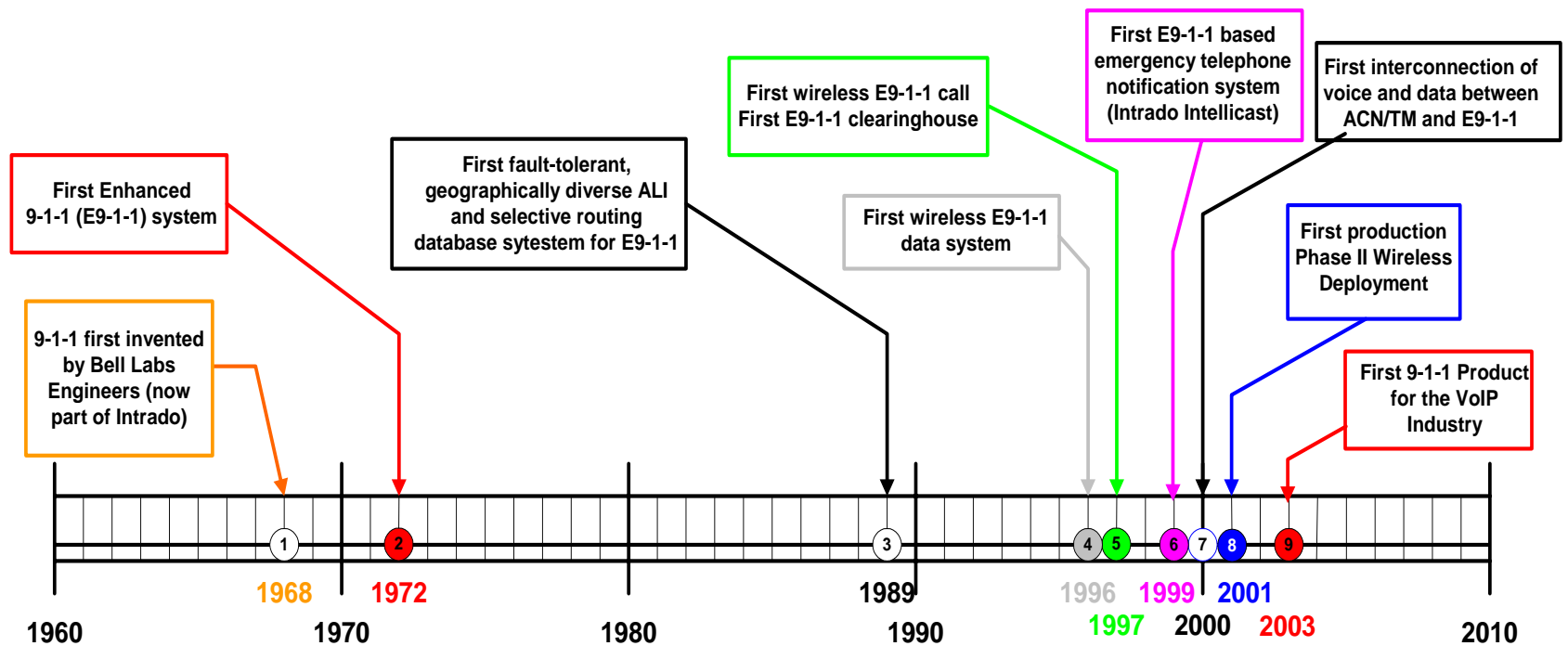
## General

- Founded in 1979
- Headquartered in Longmont, CO and offices located in Lisle, IL, Austin, TX and Zug Switzerland
- 700+ employees
- NASDAQ: TRDO

## The largest public safety systems provider in North America

- 11 ILECs – 206 million records
- 37 major CLECs – 9.8 million subscribers
- Over 40 wireless carriers – 81 million subscribers
- 800+ municipalities and government agencies using Intrado's 9-1-1 and notification software and services
- Strong relationships with over 7,700 PSAPs

# E9-1-1 Change and Expansion





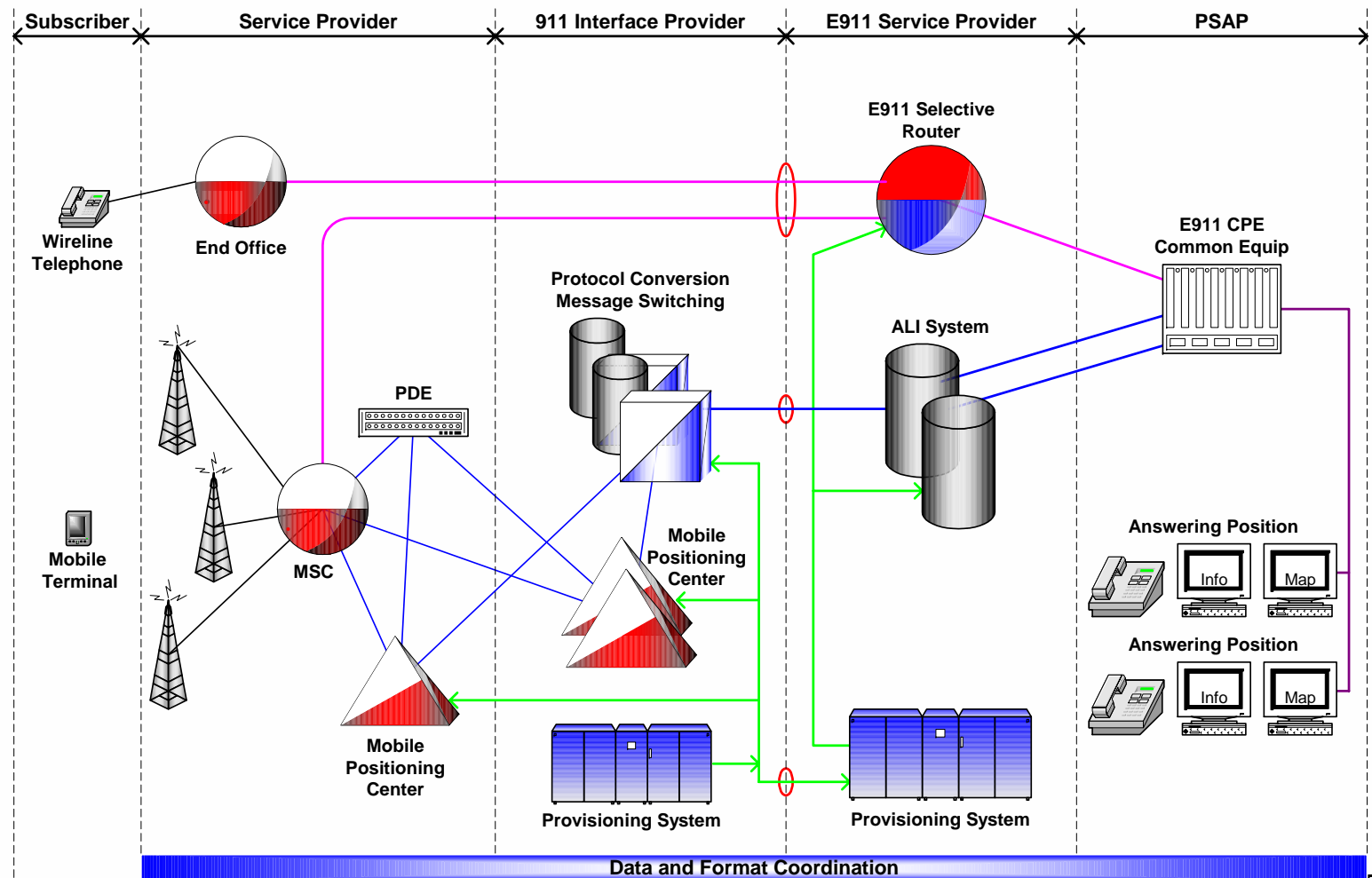
## Roles of Legacy E9-1-1 Participants

---

- 9-1-1 Service Provider (typically ILEC)
  - Maintain MSAG
  - Manage data infrastructure for subscriber info
  - Provide Selective Routing
  - Deliver calls with ANI and ALI to PSAP
- Dial-Tone Providers (ILEC and CLEC)
  - Provide customer TN information to NSP
  - Interconnect with NSP to pass call traffic
  - **Wireless: Provide real-time location information**
- Public Safety Answering Point
  - Provide information regarding service area
  - Answer calls
  - Pay 9-1-1 Service Provider



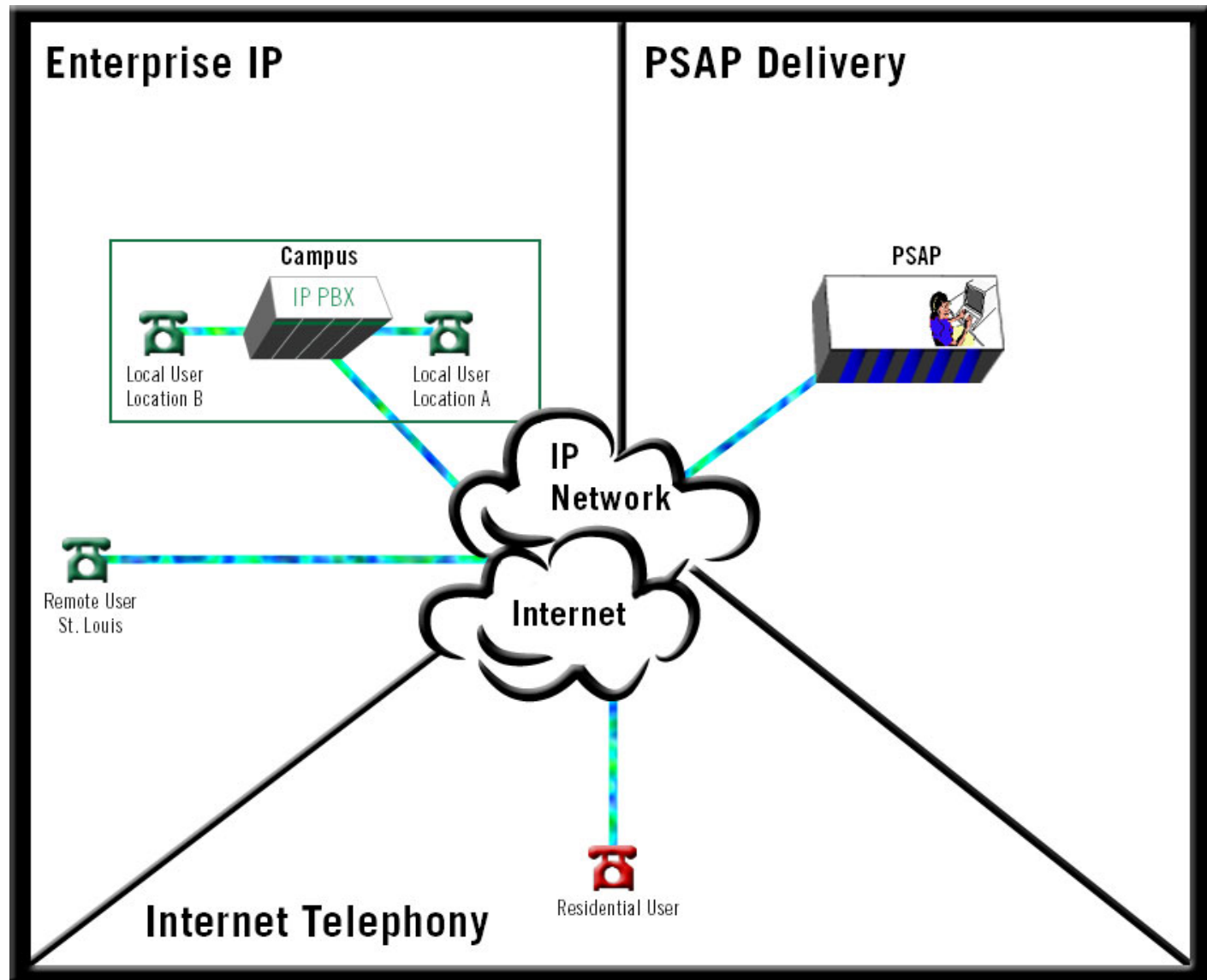
# Legacy E9-1-1 in the USA



Copyright 2002 Intrado Inc.

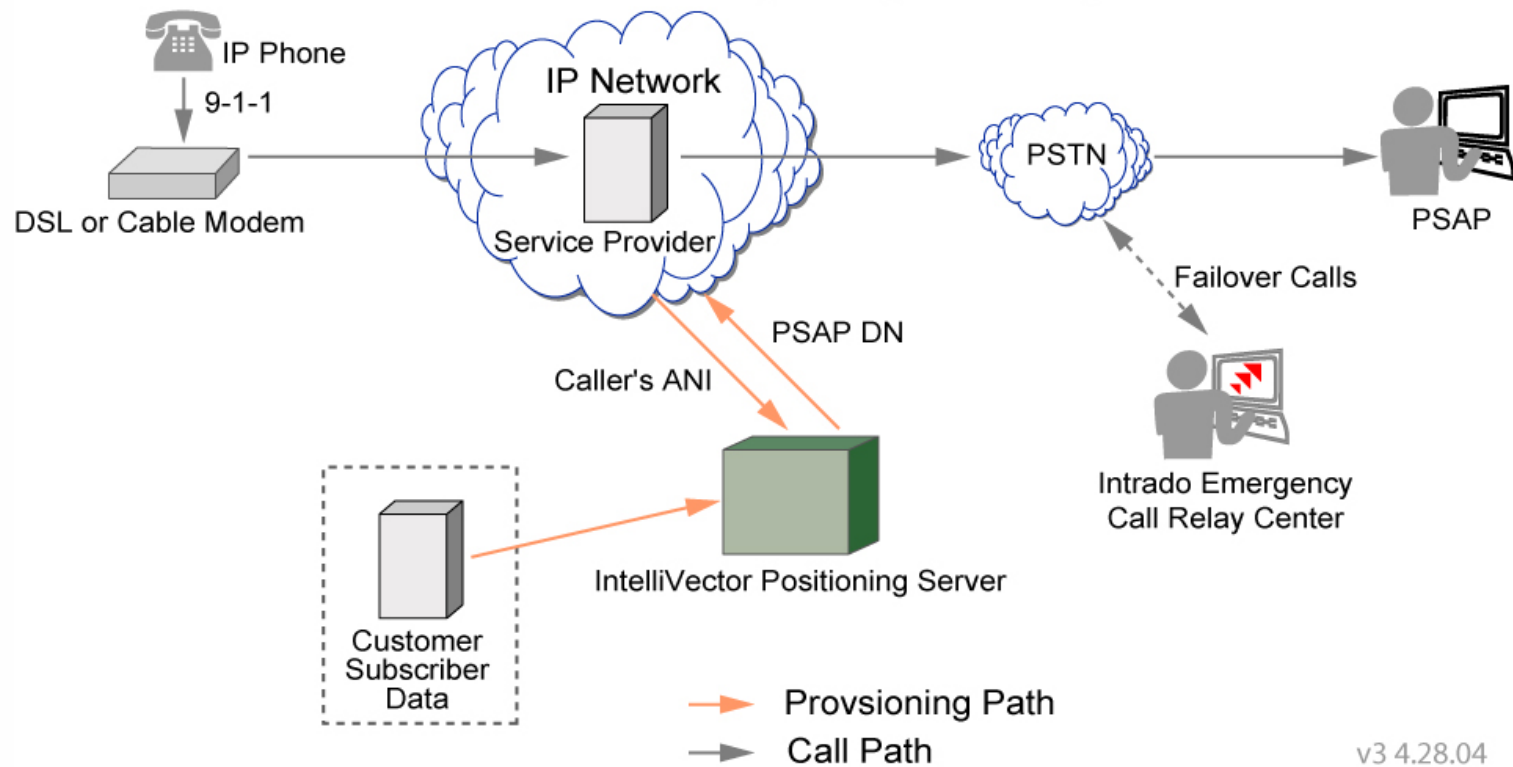


# VoIP AND 9-1-1



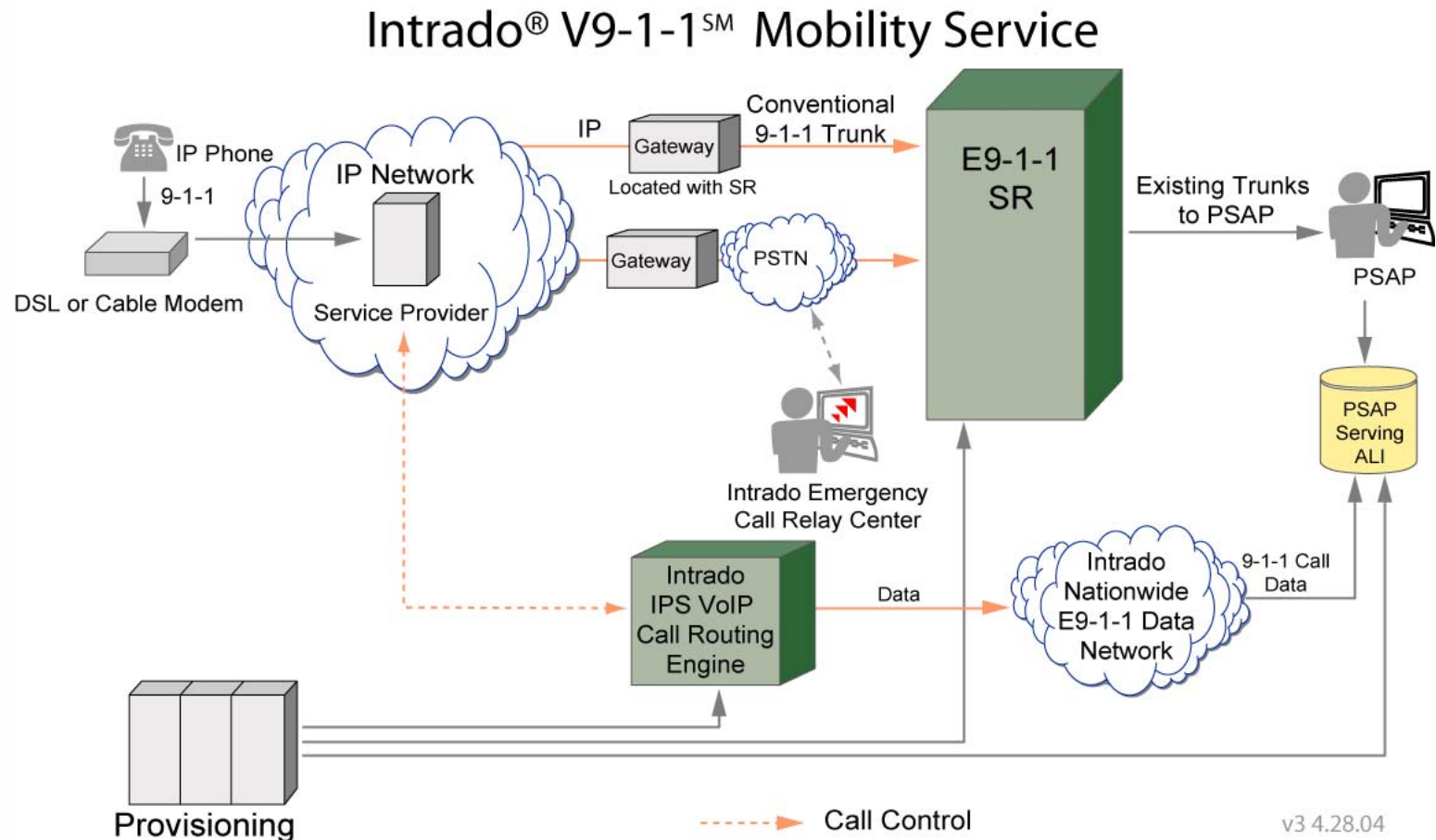
## Phase I1- PSTN to PSAP

### Intrado® V9-1-1<sup>SM</sup> Emergency Calling Services



Call arrives at correct PSAP as 10 digit call with no ALI information

## Phase I2 - Native E9-1-1

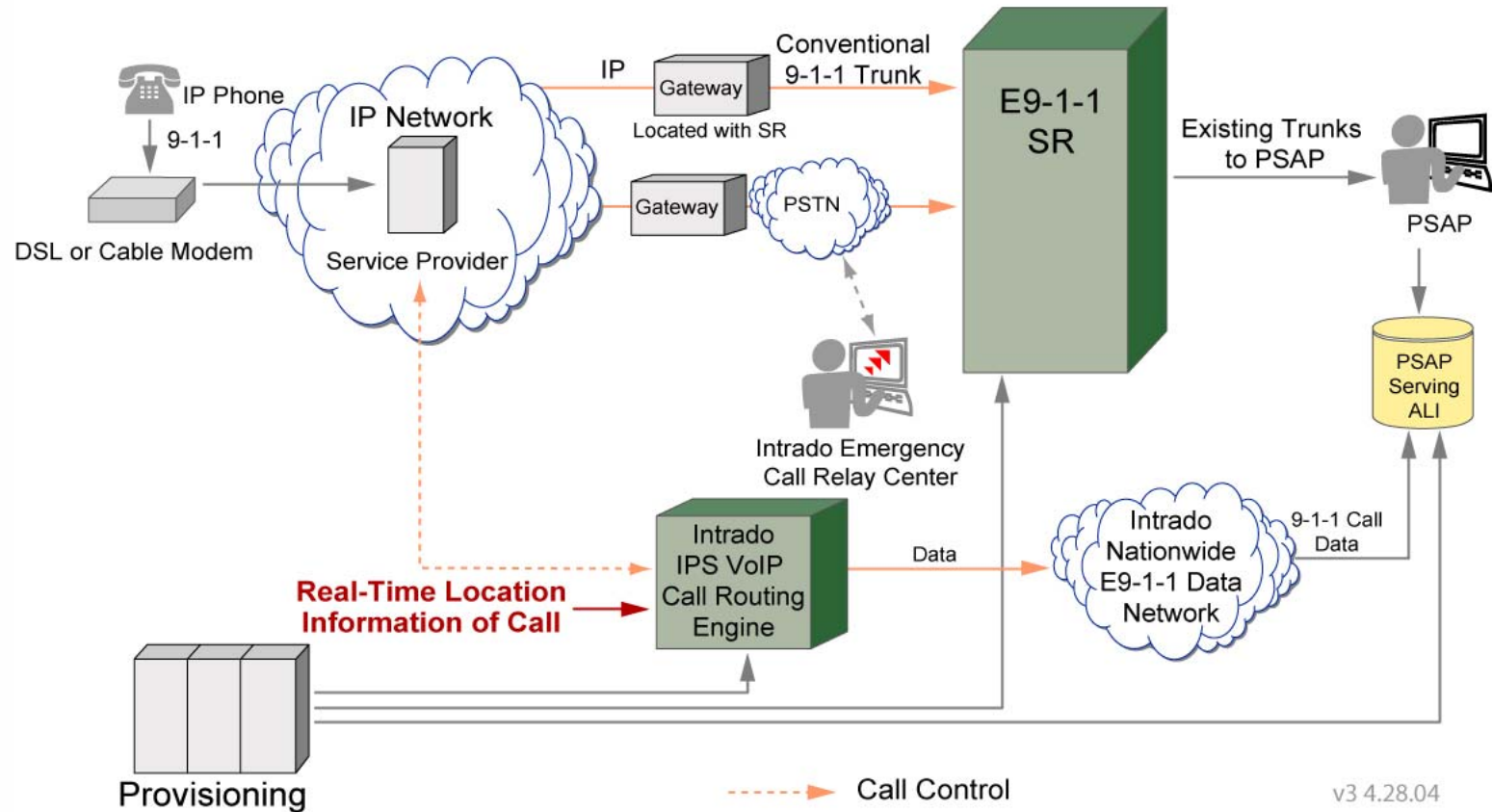


Call arrives at PSAP as 9-1-1 call with ALI of fixed location



## Phase I3 - True Location Determination

### Intrado® V9-1-1<sup>SM</sup> Real-Time Location Service



Call arrives at PSAP as 9-1-1 call with ALI of dynamic location



## VoIP 9-1-1 Challenges

---

- **Access to existing E9-1-1 environment**
  - Voice path
  - Provisioning
  - Real-time information
- **Mobility**
  - Location determination mechanism
  - Accuracy
  - Testing/certification
- **Financial matters**
  - Participation in E9-1-1 service fees
  - Cost recovery applicability



# VoIP Location Determination

- Like wireless - likely many mechanisms
  - Suggests needs for standard interfaces and operational requirements
- Current thoughts are that “access provider” will be responsible for location determination, not the application provider
- Many of the proposed schemes rely on large numbers of coordinated participant systems that are operated by disparate groups
  - Not based on real-world 9-1-1 experience
- Much concern about “autopilot” notion of devices self-reporting
  - Inability to manage and concern of “spoofing”



## Location Determination Mechanisms

---

- Access jack inventory
- Wireless access point inventory
- DNS level resolution
- Access point mapping/triangulation
- HDTV signal triangulation
- GPS - all derivatives
- Hybrid



## Discussion

---

White papers, industry documents and  
other reference materials available at:

**[www.intrado.com](http://www.intrado.com)**